

**MOUND ENVIRONMENTAL MANAGEMENT
PROJECT
INTEGRATED SAFETY MANAGEMENT SYSTEM
PHASE I VERIFICATION REPORT**

**Department of Energy
Ohio Field Office**

September 1999

U.S. Department of Energy

Executive Summary

Department of Energy (DOE) Policy (P) 450.4, Safety Management System Policy commits to institutionalizing an Integrated Safety Management System (ISMS) throughout the DOE complex. The DOE Acquisition Regulations (DEAR, 48 CFR 970) require contractors to manage and perform work in accordance with a documented ISMS.

The Manager, Ohio Field Office (OH), initiated this Phase I ISMS Verification Review to confirm that the Miamisburg Environmental Management Project (MEMP) has prepared an adequate description of its ISMS. This verification review was requested in a memorandum by DOE/MEMP in which DOE/MEMP recommended approval of the MEMP ISMS. The general conduct of the review was consistent with the direction provided by the Under Secretary's Safety Management System Review and Approval Protocol.

The purpose of this ISMS Verification (ISMSV) was to provide the Manager, OH, with a recommendation on the adequacy of the ISMS description at MEMP, based upon compliance with the requirements of 48 CFR 970.5204 (-.2 and -.78) and DOE P 450.4. Further, the ISMSV Team was to verify that the ISMS responsibilities of the OH Field Office and OH/MEMP are assigned. This verification was conducted from September 20 through September 24, 1999.

The Team performed a detailed and thorough review of the MEMP ISMS Description, PP-1049A, dated August 25, 1999 and associated documents. The Team found that the MEMP ISMS Description and enabling documents conform to the required DOE guidance. The Team also found that the ISMS responsibilities of the OH Field Office and OH/MEMP are clearly and properly assigned. Based on this ISMSV review, the Team recommends to the OH Field Office Manager that the MEMP ISMS Description, PP-1049A, dated August 25, 1999 be approved.

No deficiencies were discovered during this review, however a number of Areas for Improvement were noted. Specifically, one Area for Improvement requires correction prior to initiating a Phase II ISMS Verification review. This Area for Improvement involves inaccurate and/or incorrect references in a number of BWO and MEMP documents. This issue is further discussed in section 9.0 of this report. Additional Areas for Improvement are listed in the text of the CRADs (Appendix F of this report).

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- Appendix B OH/MEMP REQUEST FOR ISMS PHASE I VALIDATION MEMO
- Appendix C TEAM LEADER LETTER OF APPOINTMENT
- Appendix D BWO MOUND ISMS VERIFICATION PHASE I CONTRACTOR SELF ASSESSMENT FINAL REPORT, DATED MARCH 2, 1999
- Appendix E "JOINT DOE-MEMP/BWO MOUND INTEGRATED SAFETY MANAGEMENT SYSTEM VERIFICATION, PHASE I DOE-BWO SELF ASSESSMENT FINAL REPORT," DATED APRIL 29, 1999
- Appendix F CRITERIA REVIEW AND APPROACH DOCUMENTS (CRADs)
- Appendix G MEMP ISMSV TEAM QUALIFICATION SUMMARIES

1.0 INTRODUCTION

The Department of Energy (DOE) committed to institutionalization of an Integrated Safety Management System (ISMS) throughout the DOE complex in DOE Safety Management System Policy (P 450.4). This commitment is incorporated into DOE Acquisition Regulations (DEAR, 48 CFR 970.5204-2 and -78) and DOE site operations contracts requiring contractors to manage and perform work in accordance with documented ISMS processes.

At the Mound Environmental Management Project (MEMP) site, guidance and expectations for ISMS implementation have been provided to Babcock and Wilcox of Ohio (BWO) by the Ohio Field Office, Mound Environmental Management Project Office (OH/MEMP) operating contract DE-AC24-970H20044.

The OH/MEMP has requested an ISMS Phase I verification review and recommended the contractor's ISMS Plan, "ISMS Implementing Procedure, PP-1049A, Integrated Safety Management System Description," dated August 25, 1999 (Appendix A) for approval (Appendix B). This plan states that the Safety Management System description encompasses all work performed by BWO and all work subcontracted by BWO in support of the mission of the MEMP.

In response to this request, the Manager, Ohio Field Office directed that an ISMS Phase I verification review be performed. The Phase I review was conducted between September 20 and September 24, 1999, inclusively and was conducted in accordance with the Integrated Safety Management System Verification (ISMSV) Process. In accordance with reference 3, the Manager, Ohio Field Office, appointed Mr. William F. Hamel as the Phase I verification Team Leader. The team leader appointment and special scope considerations for the review are documented by Letter of Appointment OH-1128-99, dated August 25, 1999 (Appendix C).

2.0 PURPOSE

The purpose of this ISMS Verification was to confirm the adequacy of the MEMP ISMS Description to fulfill the requirements of DEAR, CFR, and DOE Policy 450.4. Further, the completed review was intended to provide the Manager, Ohio Field Office, with a recommendation of approval or identify areas which must be improved before approval of the contractor's ISMS Plan. This recommendation is based on the ability of the MEMP ISMS Description to comply with the requirements of 49 CFR 970.5204 (-.2 and -.78) and DOE P 450.4

The review was also intended to verify that the DOE Ohio Field Office and Mound Environmental Management Project Office responsibilities for ISMS are properly and clearly assigned.

Additionally, this review provides the Ohio Field Office the opportunity to continue to improve future Ohio Field Office ISMS Verifications by formally capturing the lessons learned from the review.

3.0 SCOPE

The scope of the review was to verify that the MEMP had met the letter and intent of Department of Energy Policy (P) 450.4 which states that:

The Department and Contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning, budgeting, execution, and evaluation. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment.

The ISMS Verification Team was tasked to confirm that MEMP has met the intent of this policy in a fully developed Integrated Safety Management Plan. This was accomplished by verifying that the MEMP ISMS Description meets the requirements of 48 CFR 970.5204.2 and .78. This review was a Phase I Verification conducted in accordance with Integrated Safety Management System Verification (ISMSV) Process, Team Leaders' Handbook, DOE-HDBK-3027-99, June 1999. The Phase I review consisted of a review of the adequacy of the MEMP ISMS description to fulfill the core functions and guiding principles of DOE P 450.4.

In addition to the contractor's ISMS Description, the scope of the review was to verify that the DOE Ohio Field Office and Mound Environmental Management Project Office responsibilities for ISMS were clearly and properly assigned. These responsibilities are defined in the Ohio Field Office Functions, Responsibilities, and Authorities Manual, OH-0412-99, March 2, 1999.

The review of DOE ISMS aspects included: preparation and approval of mission assignments and program guidance, allocation of resources to support the mission and safety requirements, adequacy of management guidance to the staff regarding the safety management system. In addition, the Team was tasked with reviewing OH/MEMP's participation in budget and program management by executive, program and project staff, the Authorization Agreement to implement specific programs and processes as part of the authorization basis, and ability to direct and monitor the terms and conditions of the Authorization Agreement.

The DOE review evaluated technical qualifications and experience of key members of the Ohio Field Office and Mound Environmental Management Project Office staffs as well as the program office staff to oversee the continuous application of ISMS and monitor its trends. The review of these staffs did not duplicate prior reviews or assessments, but verified the adequacy of the resultant actions to resolve issues, implement recommendations, and maintain continuous improvement programs.

4.0 SCOPE CONSIDERATIONS

The following assessments were taken into account when performing the ISMS Phase I verification review:

An ISMS Phase I Self-Assessment was conducted by BWO in February, 1999. The report entitled, "BWO Mound ISMS Verification Phase I Contractor Self Assessment Final Report," dated March 2, 1999 (Appendix D), documents an evaluation of the adequacy of the BWO ISMS Description and produced a Gap Analysis Report which identified actions required to more effectively integrate ISM principals and functions into MEMP activities.

An ISMS Phase I Self-Assessment was conducted jointly by BWO and OH/MEMP in April 1999. The report entitled, "Joint DOE-MEMP/BWO Mound Integrated Safety Management System Verification, Phase I DOE-BWO Self-Assessment, Final Report," dated April 29, 1999 (Appendix E) documents the implementation status of the ISMS principals and functions at MEMP.

The scope of the ISMS Phase I verification review took into account these ISMS self assessments and the corrective actions taken to implement the reports' recommendations and resolve the issues noted therein.

5.0 VERIFICATION APPROACH

The review was performed using the guidance provided in section 5 of DOE G 450.4 as amplified by DOE letter OH-1128-99, Brechbill to Hamel, dated August 25, 1999. A set of Criteria Review and Approach Documents (CRADs) (Appendix F) were constructed based on the Verification Team Leader's Handbook, DOE-HDBK-3027-99, June 1999. The CRADs were designed to ensure that all core expectations described in the handbook, Reference 3, were reviewed in detail. The CRADs were structured along the following functional areas:

- Business, Budget, and Contracts (CRADs: BBC.1, BBC.2, and BBC.3)

- Department of Energy (CRADs: DOE.1 and DOE.2)
- Hazards Identification and Standards Selection (CRADs: HAZ.1, HAZ.2, and HAZ.3)
- Management (CRADs: MG.1, MG.2, MG.3, and MG.4)

Each set of CRADs were then assigned to a verification sub-team of the same name, resulting in four sub-teams:

- Sub-team 1: Business, Budget, and Contracts
- Sub-team 2: Department of Energy
- Sub-team 3: Hazards Identification and Standards Selection
- Sub-team 4: Management

5.1 Department of Energy Sub-team Verification

The Department of Energy Sub-team Phase I verification review focused on the integration of ISMS into DOE-MEMP policies and procedures and also looked at the flow down of ISMS from the Ohio Field Office to DOE-MEMP. This integration and flow down were evaluated in accordance with DOE 450.4 policy and guidance. Interviews were conducted with line management and safety support staff to assure MEMP has established clear roles and responsibilities within the ISMS framework and that the procedures and processes can be efficiently and effectively interfaced within BWO.

5.2 Management Sub-team Verification

The Management Sub-team review focused on the BWO management systems designed to implement policies and procedures responsive to DOE Policies 450.4, 450.5, and 450.6; the DEAR; and the direction from the Approval Authority.

The review examined BWO's policies and procedures to ensure that the ISMS Description is maintained and integrated, and that implementation mechanisms result in integrated safety management. A review of BWO's roles and responsibilities was conducted to ensure that they are clearly defined to ensure satisfactory safety, accountability and authority, that line management is responsible for safety, and that competence is commensurate with responsibilities.

The review examined BWO's processes for gathering feedback information on the effectiveness of the ISMS; processes for opportunities for improvement identification are in place; that line and independent oversight is conducted; and, if necessary, that regulatory enforcement actions occur.

The review examined BWO's ISMS procedures that ensure controls are

implemented during preparation for the initiation of work at each level, and that procedures ensure adequate controls are identified and effectively implemented to mitigate identified hazards. Interviews were conducted with BWO managers to verify their understanding of roles and responsibilities for safety. Performance measures, plans, and schedules were reviewed to verify that BWO roles and responsibilities are clearly defined.

5.3 Business, Budget, and Contracts Sub-team Verification

The Business, Budget, and Contracts Sub-team review focused on the business systems of DOE-OH, DOE-MEMP, and BWO designed to implement, define and develop ISM core functions and guiding principles. Interviews were conducted with DOE and BWO to clarify the scope of various procedures and their relationship with higher and lower level documents.

The flow of scope definitions, balanced priorities and resource allocation were traced from the DOE-OH Integrated Priorities List down through the DOE-MEMP organization to BWO. Policy and procedures that defined this process were reviewed for consistency and adherence to the criteria specified in the three CRADs. Special attention was directed toward subcontracted work and scope definition and prioritization at the work package level. The contract documents were reviewed to ensure they were consistent with policy statements and that the proper emphasis was placed in ISM implementation.

5.4 Hazard Identification Sub-team Verification

This verification review used CRADs which addressed the identification, analysis, and categorization of hazards; the identification, selection, and approval of standards tailored to the hazards; and the establishment of clear roles and responsibilities and the maintenance of competence with responsibility, for those staff with the responsibility for the analysis and control of hazards.

The verification examined the flow down of ISMS guiding principles and core functions, and DOE requirements relative to the CRADs. DOE expectations were determined from the contract. Contract requirements linkage to the performance of work through their incorporation into site-wide and activity specific procedures was reviewed. Other documents linking DOE expectations to the performance of work, such as safety basis documents, training plans, position descriptions, and performance appraisal elements, were also reviewed.

5.5 Evaluation Criteria

Each CRAD and associated review criteria evaluated the adequacy of the ISMS Description to fulfill the application of the ISMS core functions and guiding

principles through application of the documents described within. Specifically, the CRADs examined the MEMP ISMS description and evaluated whether or not it fulfilled the core functions and guiding principles of DOE P 450.4.

Each CRAD contained an objective to fulfill one or more of the Verification Team Leader's Handbook's core expectations. Specific guidance on whether or not the MEMP ISMS description met these objectives was contained in each CRAD. A set of criteria was provided which verified that the objective has been met. Lines of inquiry provided team members guidance to perform the verification of Phase I activities.

The following evaluation categories were established for a standardized Team evaluation. Each Team member placed the results from each CRAD review criteria into one of the following evaluation categories.

Deficiencies

The ISMS Description does not include an ISMS element in the documented processes and procedures.

Areas for Improvement

The ISMS Description includes the ISMS processes but the documented processes and procedures do not adequately address the ISMS core functions and guiding principles.

Noteworthy Practices

Noteworthy practices should be adequately noted and describe the successful application of ISMS principles to acknowledge MEMP's success and transfer positive lessons learned throughout the DOE complex.

6.0 ADMINISTRATION

Mr. William F. Hamel, Team Leader, High-Level Waste Projects, West Valley Demonstration Project, Ohio Field Office, was the Team Leader for the MEMP ISMS Phase I Verification Review. The Manager, Ohio Field Office, appointed Mr. Hamel by Letter of Appointment OH-1128-99, dated August 25, 1999.

6.1 Team Organization and Composition

Four Sub-teams conducted the review as shown in Figure 1. Team members were selected based upon the criteria established by the February 21, 1997, Memorandum from the Under Secretary of Energy. These criteria included:

- Established expertise in one or more functional areas
- Appraisal experience
- Familiarity with the site/facility mission and processes
- Knowledge, understanding, and training on Integrated Safety Management

The Team roster is given in Figure 1 and qualification summaries are found in Appendix G.

6.2 Team Preparation

Proper preparation of Team members was critical to perform this verification, prepare a credible report, and provide a recommendation to the Manager, Ohio Field Office, of the MEMP ISMS Description. Therefore, members were required to prepare for their individual assignments by completion of the following required reading and/or activities. The specific required reading list for each individual team member is listed on individual qualification summaries (Appendix G).

Team reading requirements:

- Team Leader Letter of Appointment, OH-1128-99, dated August 25, 1999
- DEAR 970.5204
- DOE P 450.4, Safety Management Policy, dated October 15, 1996
- DOE G 450.4, ISMS Guide, November 27, 1997
- DOE-HNDBK-3027-99, ISMSV Process Team Leaders Handbook, June 1999
- DOE P 450.5, Line Management Safety and Health Oversight, dated June 26, 1999
- DOE P 450.6, Secretarial Policy Statement, Environmental, Safety, and Health, April 14, 1998
- MEMP ISMS Phase I Verification Plan, September 1999 (this plan)
- MEMP Safety Management System Policy (PP-1049)
- MEMP Safety Management System Description (PP-1049A)
- Ohio Safety Management Policy, OH-40.S003, dated March 11, 1998

Team members were also expected to complete Executive Level ISMS Training which was conducted by the team's ISMS Senior Technical Advisor. This training was performed the day of arrival at the MEMP.

Team members were also expected to complete the level of training required to function appropriately on site. Required site-specific training was provided at the MEMP upon arrival.

Team member Qualification Summaries were prepared and submitted to the Team Leader for approval and are incorporated into Appendix G of this document.

6.3 Site Coordination and Support

OH/MEMP and BWO contractor staff were available to assist the team and provide support on an as needed basis before and during the visit. The Office of Safety and Assessment of OH/MEMP hosted the team and provided the primary support. The principle point-of-contact was Jack Zimmerman, Associate Director for the Office of Safety and Assessment, OH/MEMP.

The Team required the following workspace, equipment, and support services at the MEMP during the Verification:

- Office space to accommodate a fifteen person team including meeting room to accommodate all team members.
- Clerical support personnel familiar with site personnel and locations, with time allocated to perform team administrative support activities.
- One assigned OH/MEMP and BWO ISMS Point of Contact including off working hours contact information.
- Computer and printing capabilities within the team work space.
- Documentation library accessible throughout the validation
- Full site access for the verification period
- MEMP provided hosts for each of the sub-teams. These hosts coordinated interviews, gathered requested documentation, and provided transportation and ready access to facilities.

6.4 Schedule

The review was conducted between September 20 and September 24, 1999, inclusively. Activities for the first day included team introductions, ISMSV training, required site training, and site ISMS Description presentations.

7.0 CONCLUSIONS

The Team performed a detailed and thorough review of the MEMP ISMS Description, PP-1049A, dated August 25, 1999 and associated documents. The

Team found that the MEMP ISMS Description and enabling documents conform to the required DOE guidance. The Team also found that the ISMS responsibilities of the OH Field Office and OH/MEMP are clearly and properly assigned. Based on this ISMSV review, the Team recommends to the OH Field Office Manager that the MEMP ISMS Description, PP-1049A, dated August 25, 1999 be approved.

No deficiencies were discovered during this review, however a number of Areas for Improvement were noted. Specifically, one Area for Improvement requires correction prior to initiating a Phase II ISMS Verification review. This Area for Improvement involves inaccurate and/or incorrect references in a number of BWO and MEMP documents. This issue is further discussed in section 9.0 of this report. Additional Areas for Improvement are listed in the text of the CRADs (Appendix F of this report).

8.0 DEFICIENCIES

None

9.0 AREAS FOR IMPROVEMENT

While no deficiencies were discovered during this review, a number of Areas for Improvement were noted. These Areas for Improvement are identified in the CRADs (volume II of this report). A thorough review of the CRADs should be performed and corrective actions developed to address the issues contained therein. Some of these issues may require correction prior to initiating a Phase II ISM Verification.

Specifically, one of the more significant Areas for Improvement involves BWO and MEMP documentation. There are a number of BWO and MEMP documents containing inaccurate or incorrect references to source documents. These are not significant deficiencies, but may be indicative of the need for more thorough document review before publication. These must be reviewed, amended, or corrected, as appropriate, prior to commencing a Phase II ISM Verification. A list of such documents and references are described in specific CRADs under the section "Opportunities for Improvements."

10.0 NOTEWORTHY PRACTICES

During this Phase I ISMS verification review, two noteworthy practices were observed as discussed below:

1. BWO and MEMP underwent an extensive self-examination process prior to requesting a Phase I Verification Review. Specifically, the two self-assessment reviews provided both BWO and MEMP with valuable

information and feedback during the process of developing an acceptable ISMS description. Further, these assessments lent credibility to the MEMP request for Phase I verification. Specifically the two self-assessments are:

- BWO Mound ISMS Verification Phase I Contractor Self Assessment Final Report,” dated March 2, 1999.
 - Joint DOE-MEMP/BWO Mound Integrated Safety Management System Verification, Phase I DOE-BWO Self-Assessment, Final Report,” dated April 29, 1999.
2. The establishment and chartering of the Compliance Review Board provides a site wide forum for addressing and assuring action is taken on opportunities for improvement and the sharing of lessons learned.

11.0 LESSONS LEARNED

1. Logistics and accommodations were well planned and executed
2. Securing DOE-HQ personnel participation as team members was lacking
3. Last minute withdrawal of team members after initial commitment to the team resulted in some part-time team member participation and placed an additional burden on full-time team members.
4. Assigned OH/MEMP and BWO Points of Contact were available and responsive

12.0 REFERENCES

1. DOE Safety Management System Policy, DOE P 450.4.
2. DOE Safety Management System Guide, Volumes 1 and 2, DOE G 450.4-1.
3. DOE Safety Management Systems Verification (ISMSV) Process, Team Leaders Handbook, DOE-HDBK-3027-99, June 1999.
4. DOE Line Management Environment, Safety and Health Oversight, DOE P450.5.
5. DOE Secretarial Policy Statement, Environment, Safety and Health Oversight, DOE P450.6.
6. Ohio Field Office Safety Management Policy (OH-40.S003).
7. Ohio Field Office Functions, Responsibilities, and Authorities Manual (FRAM), March 2, 1999.